Ultrasound- Pylorus

PURPOSE:

To evaluate for (HPS) Hypertrophic Pyloric Stenosis. Pyloric Stenosis is characterized by a defect in contractility or relaxation of the circular muscle of the pylorus that results in hypertrophy of the pyloric circular muscle and narrowing of the pyloric channel.

AGE RANGE:

- ***2 – 8 weeks of age,**
- **although symptoms can be present in the 1st week of life or as late as 5 months of age.**

SCOPE:

Applies to all ultrasound Pylorus studies performed at Imaging Services / Radiology

INDICATIONS AND PRESENTATIONS:

Patients between 2 to 8 weeks of age – up to 5 months of age although symptoms can present in the 1st week of life. Adjustments can be made for preemies

Frequent episodes of non-bilious vomiting that are described as projectile.

CONTRAINDICATIONS:

No absolute contraindications

EQUIPMENT:

Linear array transducers:

EPIQ 7G L12-5.

EPIQ 5G eL18-4.

GE LOGIC E9 ML6-15.

IU22 L12-5.

Curved array transducers:

These transducers can be used if there is a lot of bowel gas or if the stomach is over distended.

EPIQ 7G C9-2 OR C8-5 MHz, to view for penetration

EPIQ 5G C9-2 OR C8-5 MHz, to view for penetration

GE LOGIC C1-5

IU22 C1-5 OR C8-5

PATIENT PREPARATION:

- Optimally the patient should be NPO for 2 – 3 hours
- ER patients should be made NPO, after being registered.

EXAMINATION:

GENRAL GUIDELINES:

First step: In the supine position with the transducer in a transverse position and sometimes with slight anti-clockwise rotation, identify the gallbladder. The pylorus is usually located slightly medial and posterior in relation to the gallbladder

Second step: Assess the appearance and measurements of the pylorus. The muscular layer is usually a hypoechogenic thin layer less than 2 mm in thickness.

Third step: Visualize the passage of the gastric content through the pylorus, distending the antropyloric region. This dynamic evaluation is vital, as a wide open pylorus with normal passage of the gastric contents excludes Hypertrophic Pyloric Stenosis.

EXAM INITIATION:

- Introduce yourself to the patient (AIDET)
- Verify patient identify using patient name and DOB
- Explain Test
- Obtain patient history including symptoms.
- Enter and store data page
- Place patient in supine position.

DOCUMENTATION:

- Longitudinal pylorus with canal length demonstrated X 2
- If pylorus is **positive** image canal with measurements of length and thickness X 2
- Obtain 2 cine clips of stomach contents emptying
- Transverse pylorus with muscle thickness demonstrated
- Include a transverse image of the midline abdomen with and without color to show position of SMA/SMV relationship.
- Include a transverse cine sweep of the SMA with color at the level of the pancreas or area of concern, as to rule out other findings, such as malrotation/volvulus.

TECHNIQUE CONSIDERATIONS:

- **Review any prior imaging exams that are available, making note of any abnormalities that require further evaluation.**

Technique notes

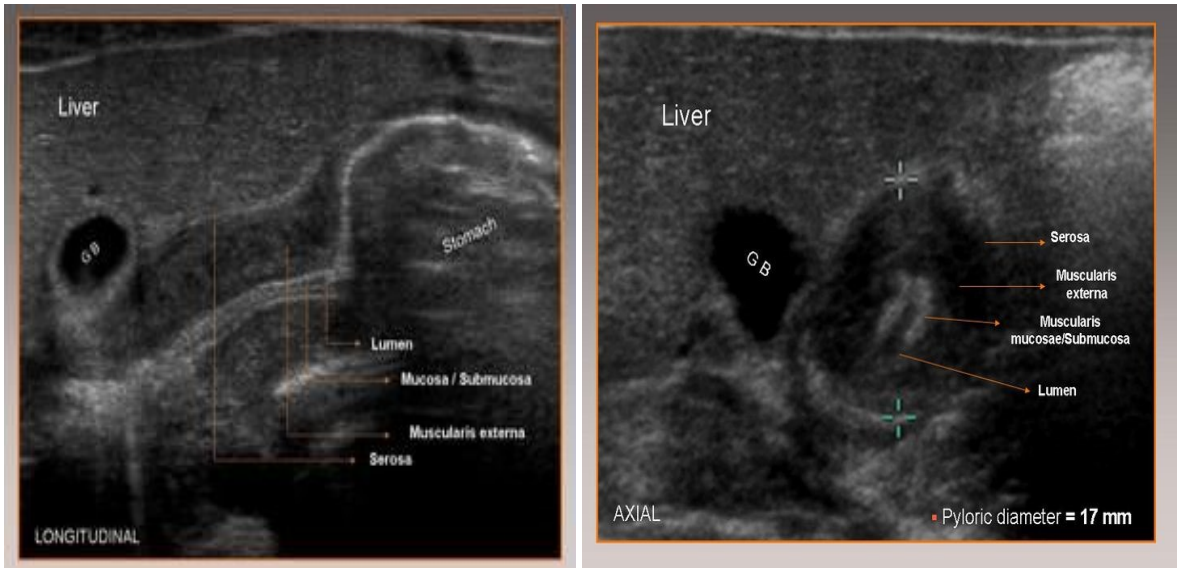
One common difficulty is a stomach filled with gas. The easiest way to avoid this is by placing the infant in an oblique position with the right side down, as this will allow fluid to fill the antrum, acting as an acoustic window. A stomach completely filled with milk, in this case one can turn the patient LLD, to move the stomach contents away from the pylorus, or turn the patient RPO or RLD and use the fluid as an acoustic window. If the stomach is empty and no fluid is seen passing through, give the infant pedialyte (10cc-15cc), you elevate the patient using the pillow. You will be scanning while the patient is drinking, watching as the stomach fills and be sure not to overfill the stomach.

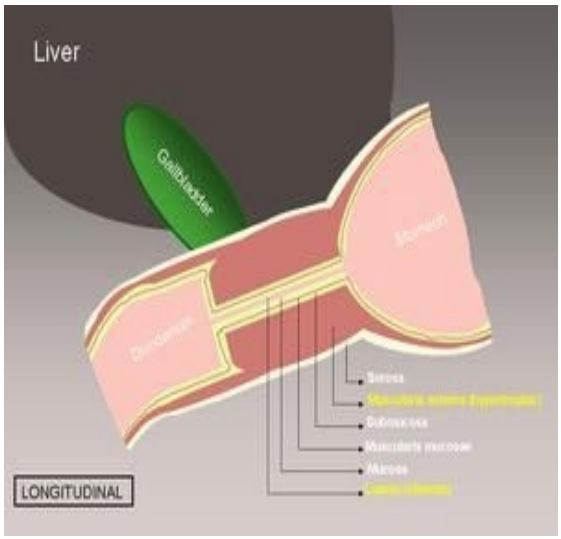
Another frequent problem is that a markedly distended stomach can displace the pylorus dorsally making it very difficult to access. In this situation, moving the infant into an oblique position with the left side down will help to move the pylorus to a more anterior position.

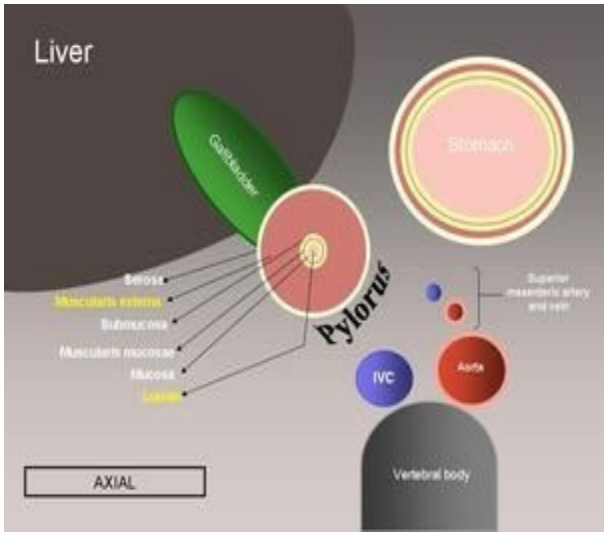
• ***The main diagnostic criterion is a measurement of more than 3mm in thickness of the muscular layer.***

• ***Abnormal elongation of the canal is characterized as greater than 15 mm in length.***

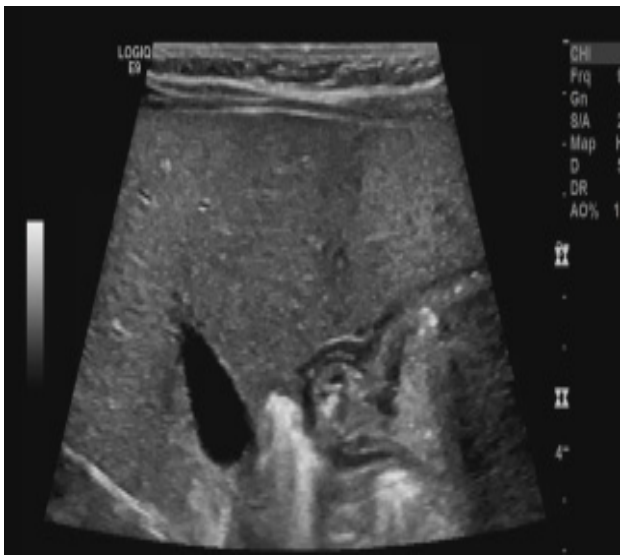
These images represent an Abnormal Pyloric:

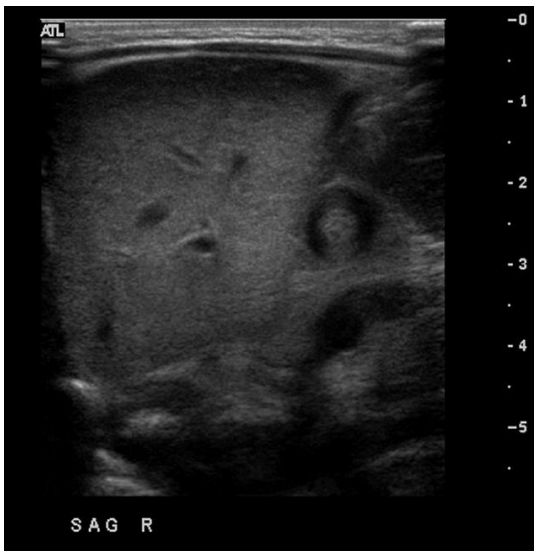






These images represent a normal Pyloric:





<u>PROCESSING</u>:

- Export all images to PACS
- Review examination images and data on PACS
- Document relevant history and impressions in primordial.
- Present images to Radiologist

<u>REFERENCES</u>:

*Siegel, Marilyn, (2002). Pediatric Sonography. Philadelphia, PA: Lippincott Williams and Wilkins.

REVISION HISTORY:

US PYLORUS PROTOCOL

SUBMITTED BY:	**Karla Akinode, B.S., RDMS**	**Title**	**Diagnostic Sonographer**
APPROVED BY:	**Jeannie Kwon, M.D.**	**Title**	**Director of Ultrasound**
APPROVAL DATE:	**08/28/2019**		
REVIEW DATE(S):	**05/12/2018**		**Samantha Lewis, B.S., RDMS**
REVISION DATE(S):	**08/26/2019**	**Brief Summary**	**New line item for trans sweep of SMA**